## REMARKS

This Amendment is in response to the final Office action (Paper No. 20090426) mailed on 1 May 2009. Reexamination and reconsideration are respectfully requested.

**Listing of The Claims**

Pursuant to 37 CFR §121(c), the claim listing, including the text of the claims, will serve to replace all prior versions of the claims, in the application.

**Status of The Claims**

Claims 1-10 are pending in this application.

**Amendment of The Claims**

No claim is amended in this Paper.

**Interview Summary Under 37 CFR §1.133**

During the Office interview held with Applicant's undersigned attorney and Examiner Kyung-Hye Shin, on Friday, on the 31st of July 2009, independent router claims 1 and 9, and independent process claims 2 and 7 were discussed in conjunction with the drawings, original specification, and the prior art of record including Civanlar U.S. 6,078,963 and Dobbins, U.S. 5,951, 649.

**First**, the statement written on the bottom of page 5 of Paper number 20090426, namely that the secondary reference, Dobbins, U.S. 5,951, 649, might be read as teaching.

> "an extremely flexible, scalable, and adaptive architecture for different hub configurations and able to support a variety of present and future protocols" (see Dobbins at column 1, lines 54-58),

fails to provide teaching enablement for a structure which might provide a "flexible, scalable, and adaptive architecture for different hub configurations and able to support a variety of present and future protocols." In point of fact, this passage of Dobbins '649 is nothing more than a simple suggestion of a desirability of a corresponding very complex circuit which is necessary to provide "an extremely flexible, scalable, and adaptive architecture for different hub configurations and able to support a variety of present and future protocols" because Dobbins '649 is completely devoid of teaching or suggestion of any of the structure necessary for that complex circuit.

**Second**, Paper number 20090426 relies upon the statement in Civanlar U.S. 6,078,963, as teaching the structure defined by Applicant's claims 1 and 9, that is a:

> "switching module having a plurality of routing protocol processing units communicatively connected with the corresponding routing protocol processing units of these are the routing nodes."

In point of fact, a though review of (*i*) Civanlar '963, (*ii*) Dobbins '649, and (*iii*) the Examiner's proposed combination of Civanlar '963 and Dobbins '649, reveals that this passage of Civanlar '963 enables nothing more than switching fabric 102 illustrated in block diagram 102 of Fig. 1, namely:

> "a bus interconnecting all of the line cards",

and includes no details of the "more enhanced embodiment" such as "multiplexors and/or demultiplexors" or "a reconfigurable partial and/or full mesh of direct or indirect connections between various intelligent router ports 103 and/or a network of switches (including conventional crossbar switches)" as discussed in column 3 of Civanlar'963 and the Examiner's proposed combination.

**Third**, during the interview Applicant requested the second Office interview with both the Examiner and the Supervisory Primary Examiner present.

**Fourth**, the several courtesies extended to Applicant's attorneys during the Office interview are noted with appreciation.

**Issues Raised by the Final Office Action (Paper No. 20090426)**

In the final Office action (Paper No. 20090426), the Examiner stated:

- Claim 1 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Civanlar et al. (US Patent No. 6,078,963) in view of Dobbins et at (US Patent No. 5,951,649);

- Claims 2 -8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Civanlar in view of Venkatachary et al. (US Patent No. 6,212,184); and

- Claims 9,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Civanlar-Venkatachary and further in view of Dobbins.

Applicant respectfully traverses because of the following reasons.

**1. Claim 1**

One principal patentable distinction between the pending claims and the combined prior art is that the prior art fails to teach or suggest claim 1's "*the switching module disposed to share in real time routing information collected by each of the routing nodes with others of the routing nodes*". See the pending claim:

> ***claim 1***, "the switching module disposed to share in real time routing information collected by each of the routing nodes with others of the routing nodes".

Regarding the above-cited claim language, in Paper No. 20090426, the Examiner intentionally misread the language to allege that the claim limitation is for routing information to be shared. Specifically, on page 2 of Paper No. 20090426, the Examiner stated:

> "The claim limitation is for routing information to be shared. Examiner has not found any disclosure other than the information must be shared or the information is available and used by all routers. Civanlar discloses that routing information is forwarded to all routers; therefore all routing information is available and shared by all routers. (Civanlar col. 3, lines 41-47: forwarding engine configured to forward new routing table configuration data to every other router port for updating

database; information shared between routing entities)".

In addition, on page 2 of Paper No. 200904256, the Examiner identified Civanlar '963's "switching fabric" as Applicant's "switching module", by stating that:

> "Applicant argues that the referenced prior art does not disclose, a switching module that shares routing information. The sharing routing information disclosure has been discussed by the previous response. Civanlar discloses a switching module. (Civanlar col 2, ll 41-44: switching fabric coupled with a plurality of intelligent router ports; col 4, ll 8-11: each router port performs functions of a conventional router)".

Applicant respectfully traverses because Civanlar '963's "switching fabric" (identified as Applicant's "switching module") does not share routing information with other router ports.

Specifically, Civanlar '963 merely teaches that each forwarding engine 105 may forward new routing table configuration data to every other router port 103.[1] But Civanlar '963's "forwarding engine 105" is included in the corresponding router port 103, thereby being not synonymous with Civanlar '963's "switching fabric" (identified as Applicant's "switching module") which is coupled with a plurality of router ports 103. In addition, the forward engine 105 of Civanlar '963 is included into its own router port 103 such that the forward engine itself has its own routing protocol only. In other words, the forward engine of Civanlar '963 does not have a routing protocol of another forward engine 105.

Moreover, a thorough review of Civanlar '963 demonstrates that Civanlar '963 does

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[1] Civanlar '963's column 3, lines 43-47 reads: "each forwarding engine 105 may be configured to forward new routing table configuration data received on one or more of the network interfaces 110 to every other intelligent router port 103 for updating each of the routing databases 104."

not disclose that Civanlar '963's "switching fabric" (identified as Applicant's "switching module") can share routing information with other router ports. Rather, as disclosed in column 3, lines 10-27 of Civanlar '963, the switching fabric does not have a central processor, and each router port may maintain its own routing tables without the need for a central processor coordinating this activity.[2] Therefore, Civanlar '963 explicitly teaches away from having Applicant's "switching module sharing routing information of each routing node with other routing nodes".

The Examiner's attention is further invited to note a protocol named "Routing Information Protocol (RIP)". Nothing in this RIP protocol has sharing of routing information by a switching fabric.

Therefore, because Dobbins '649 teaches nothing to remedy these deficiencies in Civanlar '963, the rejection of claim 1 is in error and should be withdrawn.

**2. Claims 1 and 9**

Another principal patentable distinction between the pending claims and the combined prior art is that the prior art fails to teach or suggest claim 1's "*switching module having a plurality of routing protocol processing units communicatively connected with the*

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[2] Civanlar '963's column 3, lines 19-27 reads: "Accordingly, embodiments of the present invention do not require the switching fabric 102 nor the router 100 itself to have a central processor as is required in conventional routers. Instead, as will be discussed in more detail below, each intelligent router port 103 may operate autonomously and may be capable of generating and maintaining its own routing tables and/or forwarding data packets in accordance with the routing tables, without the need for a central processor coordinating this activity."

*corresponding routing protocol processing units of each of the routing nodes*", and claim 9's "*each routing node having a plurality of routing protocol processing units communicatively connected with corresponding routing protocol processing units in the switching module*". See the pending claims:

> ***claim 1***, "a plurality of routing nodes each having a plurality of routing protocol processing units, with each routing protocol processing unit processing data in accordance with a respectively corresponding routing protocol; and
> a switching module having a plurality of routing protocol processing units communicatively connected with the corresponding routing protocol processing units of each of the routing nodes, "
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> ***claim 9***, "a switching module accommodating a plurality of routing protocol processing units ... ; and
> a plurality of routing nodes, ... with each routing node having a plurality of routing protocol processing units communicatively connected with corresponding routing protocol processing units in said switching module to form a source area comprising a virtual area and share in real time collected routing information assembled by a routing table and an aggregation tree derived from said routing table."

Regarding the above-cited claim limitation, in Paper No. 20090426, the Examiner identified Civanlar '963's "switching fabric" as Applicant's "switching module", and explicitly admitted that Civanlar '963 does not disclose processing data in accordance with a respectively corresponding routing protocol. But, the Examiner referred to Dobbins '649 which teaches a Network Interface Table 224 in a Routing Protocol Object providing protocol-specific configuration for each network interface. Specifically, on pages 4-6 of Paper No. 20090426, the Examiner stated:

> "Regarding Claim 1, Civanlar discloses a distributed

router comprising:

a) a plurality of routing nodes each having a plurality of routing protocol processing units, with each routing protocol processing unit; (Civanlar col. 2, lines 53-55: coupled to network nodes such as routers/switches in a overall network (plurality of routers); col 3, ll 37-41: any known types of routing protocols packets may be received (OSPF, RIP, BGP4))

b) a switching module having a plurality of routing protocol processing units communicatively connected with the routing protocol processing units of each of the routing nodes, with the switching module disposed to share in real time routing information collected by each of the routing nodes with others of the routing nodes. (Civanlar col. 3, lines 41-47: forwarding engine configured to forward new routing table configuration data to every other router port for updating database; col 3, ll 37-41: any known types of routing protocols packets may be received (OSPF, RIP, BGP4); col 2, ll 41-55: switching fabric coupled with plurality of router ports; col 4, ll 8-11: router port may perform some or all functions of a conventional router).

Civanlar does not explicitly disclose processing data in accordance with a respectively corresponding routing protocol. However, Dobbins discloses wherein processing data in accordance with a respectively corresponding routing protocol. (Dobbins col 7, ll 33-38: each forwarding engine knows how to receive and transmit packets on its own interface or the one interface it is associated with; col 15, ll 54-56: provides protocol-specific configuration information for each attached network interface)

It would have been obvious to one of ordinary skill in the art to modify Civanlar for processing data in accordance with a respectively corresponding routing protocol as taught by Dobbins. One of ordinary skill in the art would have been motivated to employ the teachings of Dobbins for an extremely flexible, scaleable, and adaptive architecture for different hub configurations and able to support a variety of present and future protocols. (Dobbins col1, ll 54-58)".

Applicant respectfully traverses because neither one of Civanlar '963 and Dobbins '649, nor the combination thereof, teaches or suggests Applicant's "routing protocol processing units" included in the switching module and each one of the router nodes.

**Firstly**, a thorough review of Civanlar '963 convincingly demonstrates that Civanlar '963 does not use the textual description quoted by Paper No. 20090426, that is, "*Civanlar discloses a distributed router comprising: a) a plurality of routing nodes each having a plurality of routing protocol processing units*"; the sole occurrence of that language in the administrative record for this prosecution history is found in Applicant's pending claims. This hindsight reconstruction of the art is convincing indicia of non-obviousness.

**Secondly**, after reviewing Paper No. 20090426, it is not clear to Applicant which element in Civanlar '963 corresponds to Applicant's "routing nodes", and which element in Civanlar '963 corresponds to Applicant's "routing protocol processing units"? Therefore, Applicant assumes that the Examiner attempted to identify Civanlar '963's "router port 103" as Applicant's "routing node".

If the above-mentioned Applicant's assumption is **not** in accordance with the Examiner's original intention, Applicant respectfully requests the Examiner, in view of 37 CFR §1.104(b) and (c), to clarify this issue in the next **non-final** Office action.

If the above-mentioned Applicant's assumption is in accordance with the Examiner's original intention, and the Examiner did attempt to identify Civanlar '963's "router port 103" as Applicant's "routing node", the Examiner's attention is respectfully invited to note that Civanlar '963's "router port 103" does not have any "routing protocol processing unit".

Specifically, Civanlar '963's column 3, lines 37-41 as cited by the Examiner in Paper No. 20090426 merely mentions that routing engine 107 disclosed in router port 103 (assumably identified by the Examiner as Applicant's "routing node") may receive different

types of routing protocols packets.[3] But, Civanlar '963 does not disclose how to process those different types of routing protocols packets, or whether those different types of routing protocols packets are processed in the same processing unit or in different processing units based on the respectively corresponding routing protocol. On the other hand, Applicant's claims 1 and 9 define that each routing protocol processing unit processes data in accordance with a respectively corresponding routing protocol. In other words, in the pending claims 1 and 9's distributed router, data with different protocol is processed in a corresponding routing protocol processing unit.

Therefore, Civanlar '963's "router port 103" does not have any "*routing protocol processing unit for processing data in accordance with a respectively corresponding routing protocol*".

**Thirdly**, Dobbins '649 merely teaches that each interface has a forwarding engine which knows how to receive and transmit packets on its own interface,[4] and that a Network Interface Table 224' provides protocol-specific configuration information for each attached network interface.[5] But, Dobbins '649 does not disclose how does the network interface

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[3] Civanlar '963's column 3, lines 37-41 reads: "Any known types of routing protocols packets may be received by the routing engine 107, such as those conforming to the routing Internet protocol (RIP), the open shortest path forwarding (OSPF) protocol, or the border gateway protocol 4 (BGP4)."

[4] Dobbins '649's column 7, lines 33-35 reads: "each interface 11, 14, 17 has a forwarding engine 12, 15, 18 sitting above it, and each forwarding engine knows how to receive and transmit packets on its own interface."

[5] Dobbins '649's column 7, lines 33-35 reads Network Interface Table 224'--This object provides protocol-specific configuration information for each attached

process those protocol-specific configuration information, or whether those protocol-specific configuration information are processed in the same processing unit or in different processing units based on the respectively corresponding routing protocol.

Therefore, Dobbins '649's "network interface" does not have any "*routing protocol processing unit for processing data in accordance with a respectively corresponding routing protocol*".

In summary, neither one of Civanlar '963 and Dobbins '649, nor the combination thereof, teaches or suggests Applicant's "*routing protocol processing units included in the switching module and each one of the router nodes for processing data in accordance with a respectively corresponding routing protocol*".

Consequently, the rejections of claims 1 and 9 is in error and should be withdrawn.

**3. Claim 2**

**(1)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 2's "*when new routing information is to be inserted into a routing table, detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree*". See the pending claim:

> ***claim 2***, "(1) when new routing information is to be inserted into a routing table in a distributed router in which all routing nodes share a forwarding information made according

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network interface.

> to an aggregation tree based on the routing table, detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner alleged that Civanlar '963 teaches Applicant's "inserting new routing information into a routing table" by stating that,

> "Updated configuration or routing data (interpreted as modifications which can be interpreted as additions and deletions) is forwarded to all routers. (Civanlar col. 3, lines 41-47: forwarding engine configured to forward new routing table configuration data to every other router port for updating database; information transferred, available, or shared between routing entities)".

In addition, the Examiner explicitly admitted that Civanlar '963 does not disclose an aggregation tree. But, the Examiner referred to the source and destination trie of Venkatachary '184, and stated:

> "Civanlar discloses the insertion of routing information into a routing table. Civanlar does not explicitly disclose an aggregation tree for routing information. However, Venkatachary discloses: (1) wherein an aggregation tree based on the routing table, detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree; (Venkatachary col. 15, lines 50-60: search and update (insert) location routing information)".

Applicant respectfully traverses because the combination of Civanlar '963 and Venkatachary '184 fails to teach or suggest Applicant's "*detecting a position of an insertion node corresponding to the routing information to be added in the aggregation tree*".

Respectfully, Civanlar '963's column 3, lines 41-47, as cited by the Examiner, merely

mentions that routing database 104 can be updated by the new routing table configuration data. Nowhere in Civanlar '963 does Civanlar '963 teach or suggest that whether Civanlar '963's "new routing table configuration data" contains the routing information to be inserted or the routing information to be deleted, or exactly how to "update" the routing database. Therefore, the Examiner's assertion that "*updated configuration or routing data (interpreted as modifications which can be interpreted as additions and deletions)*" is unsupported by all of the evidence of record except an impermissible hindsight reconstruction of the art in the light provided solely by Applicant's claims; such is the antithesis of obviousness.

In addition, Venkatachary '184's column 15, lines 50-60, as cited by the Examiner, merely teaches traversing a destination trie and a source trie to find nodes that are associated with a prefix of D'. But there is no evidence in Venkatachary '184's specification showing that Venkatachary '184's "prefix of D'" corresponds to the routing information to be inserted to or deleted from the destination trie or the source trie. Therefore, Venkatachary '184 does not teach Applicant's "*an insertion node corresponding to the routing information to be added*", or "*detecting a position of an insertion node corresponding to the routing information to be deleted in the aggregation tree*".

Consequently, it would **not** have been obvious to one with ordinary skill in the art to combine Civanlar '963's teaching of "updating a routing database" with Venkatachary '184's teaching of " traversing a destination trie and a source trie to find nodes that are associated with a prefix of D'" to make Applicant's "*detecting a position of an insertion node corresponding to the routing information to be added in the aggregation tree*".

As a result, the rejection of claim 2 is in error and should be withdrawn.

**(2)** Still yet another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 2's "*determining presence and absence of an ancestor node of the insertion node* ***at or below a predetermined maximum aggregation level*** *with respect to the insertion node*". See the pending claim:

> ***claim 2***, "(2) determining presence and absence of an ancestor node of the insertion node at or below a predetermined maximum aggregation level with respect to the insertion node".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 10, lines 6-22 and column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "determine existence or presence of ancestor node". Specifically, on pages 6-7 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) determining presence and absence of an ancestor node of the insertion node at or below a predetermined maximum aggregation level with respect to the insertion node; (Venkatachary col. 10, lines 6-33; col 16, ll 26-36: determine existence or presence of ancestor node)".

Applicant respectfully traverses because Venkatachary '184 does not disclose "*determining existence or presence of ancestor node at or below a predetermined maximum aggregation level)*". Venkatachary '184 merely mentions an "ancestor record", and an "ancestor trie"; but Venkatachary '184 does not disclose whether the ancestor record or the ancestor trie is searched **within a specific level**.

Therefore, neither one of Civanlar '963 and Venkatachary '184, nor the combination thereof, teaches or suggests Applicant's claim 2's "*determining presence and absence of an ancestor node of the insertion node* ***at or below a predetermined maximum aggregation level*** *with respect to the insertion node*".

As a result, this rejection of claim 2 is in error and should be withdrawn.

**(3)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 2's "*leaving a forwarding table un-updated with information about the insertion node in a presence of the ancestor node,* ***when forwarding information corresponding to the ancestor node is in the forwarding table and both of the insertion node and the ancestor node have been generated from a common source area***". See the pending claim:

> ***claim 2***, "(3) leaving a forwarding table un-updated with information about the insertion node in a presence of the ancestor node, when forwarding information corresponding to the ancestor node is in the forwarding table and both of the insertion node and the ancestor node have been generated from a common source area".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 16, lines37-52 of Venkatachary '184 and alleged that Venkatachary '184 teaches "switch pointer inserted when nil". Specifically, on page 7 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) leaving a forwarding table un-updated with information about the insertion node in a presence of the ancestor node, when forwarding information

> corresponding to the ancestor node is in the forwarding table and the insertion node and both of the ancestor node have been generated from a common source area; (Venkatachary col. 16, lines 37-52: switch pointer inserted when nil; no node exists)".

Applicant respectfully traverses because Venkatachary '184 does not use the textual description quoted by the Examiner, namely, "switch pointer inserted when nil; no node exists". Rather, column 16, lines 49-50 of Venkatachary '184 reads:

"If no such node v exists, the switch pointer is nil".

According to this sentence of Venkatachary '184 , when a specific node, i.e., node **v**, does not exist, the switch pointer is nil. Nowhere in Venkatachary '184 does Venkatachary '184 teach a case when no node exists, or a process step of "inserting a switch pointer" when no node exists.

Moreover, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a scenario defined in claim 2, namely, "*when forwarding information corresponding to the ancestor node is in the forwarding table and both of the insertion node and the ancestor node have been generated from a common source area*".

Therefore, the Examiner's conclusion is unsupported by all of the evidence of record except an impermissible hindsight reconstruction of the art in the light provided solely by Applicant's claims; such is the antithesis of obviousness.

**(4)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 2's "*in an absence of the ancestor node, resetting the aggregation level to a reset aggregation level*

*not greater than the maximum aggregation level, and inserting forwarding information corresponding to a delegation node representative of the insertion node at the reset aggregation level in the forwarding table*". See the pending claim:

> ***claim 2***, "(4) in an absence of the ancestor node, resetting the aggregation level to a reset aggregation level not greater than the maximum aggregation level, and inserting forwarding information corresponding to a delegation node representative of the insertion node at the reset aggregation level in the forwarding table".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "switch pointer reset to ancestor node level in searching tree". Specifically, on page 7 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) in an absence of the ancestor node, resetting the aggregation level to a reset aggregation level not greater than the maximum aggregation level, and inserting forwarding information corresponding to a delegation node representative of the insertion node at the reset aggregation level in the forwarding table; (Venkatachary col. 16, lines 26-36: switch pointer; reset to ancestor node level in searching tree)".

Applicant respectfully traverses because Venkatachary '184 does not disclose "switch pointer; reset to ancestor node level in searching tree".

Respectfully, a thorough review of Venkatachary '184 demonstrate that Venkatachary '184 does not use the textual description quoted by the Examiner, namely, "switch pointer; reset to ancestor node level in searching tree". Rather, column 16, lines 31-33 of Venkatachary '184 reads:

> "Intuitively, the switch pointers allow a jump directly to the lowest point in the ancestor source trie that has at least as good a source match as the current node".

In addition, Venkatachary '184 does not disclose "*inserting forwarding information corresponding to a delegation node representative of the insertion node at the reset aggregation level in the forwarding table*".

Moreover, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a scenario with "*an absence of the ancestor node*" as defined in claim 2.

Therefore, this rejection of claim 2 is in error and should be withdrawn.

**(5)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 2's "*making an insertion of forwarding information by determining the source area of the routing information to be inserted, inserting forwarding information corresponding to the delegation node in the forwarding table when the source area of the routing information is a virtual area, and inserting forwarding information corresponding to the insertion node in the forwarding table when the source area of the routing information is a local area*". See the pending claim:

> ***claim 2***, "(5) making an insertion of forwarding information by determining the source area of the routing information to be inserted, inserting forwarding information corresponding to the delegation node in the forwarding table when the source area of the routing information is a virtual area, and inserting forwarding information corresponding to the insertion node in the forwarding table when the source area of the routing information is a local area".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 15, lines 50-60 of Venkatachary '184 and alleged that Venkatachary '184 teaches "update (insert) location forwarding information". Specifically, on page 7 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) making an insertion of forwarding information by determining the source area of the routing information to be inserted, inserting forwarding information corresponding to the delegation node in the forwarding table when the source area of the routing information is a virtual area, and inserting forwarding information corresponding to the insertion node in the forwarding table when the source area of the routing information is a local area. (Venkatachary col. 15, lines 50-60: update (insert) location forwarding information)".

Applicant respectfully traverses because Venkatachary '184's column 15, lines 50-60 as cited by the Examiner merely mentions that the router may update the least cost matching filter.[6] A thorough search of Venkatachary '184's specification demonstrates that Venkatachary '184 does not disclose how to "update the least cost matching filter". Venkatachary '184 does not however, teach inserting new routing information, or determining whether the source area of the routing information is a virtual area or a local area.

Therefore, this rejection of claim 2 is in error and should be withdrawn.

**4. Claim 3**

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[6] Venkatachary '184's column 15, lines 53-55 reads: "The router searches the source trie of D', and updates the least cost matching filter."

Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 3's "*when a delegation node is found to exist at the position of the insertion node while detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree, deleting from the forwarding table forwarding information corresponding to the delegation node*". See the pending claim:

> ***claim 3***, "before making said insertion of forwarding information, and when a delegation node is found to exist at the position of the insertion node while detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree, deleting from the forwarding table forwarding information corresponding to the delegation node".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 15, lines 50-60 of Venkatachary '184 and alleged that Venkatachary '184 teaches "update location forwarding information". Specifically, on page 8 of Paper No. 20090426, the Examiner stated:

> "Civanlar does not explicitly disclose an aggregation tree for routing information. However, Venkatachary discloses wherein comprised of, before making said insertion of forwarding information, and when a delegation node is found to exist at the position of the insertion node while detecting a position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree, deleting from the forwarding table forwarding information corresponding to the delegation node. (Venkatachary col. 15, lines 50-60; update location forwarding information)".

Applicant respectfully traverses because Venkatachary '184's column 15, lines 50-60 as cited by the Examiner merely mentions that the router may update the least cost matching

filter, and it is unclear from Venkatachary '184's specification whether Venkatachary '184's "*updating the least cost matching filter*" is synonymous with Applicant's "*deleting forwarding information from the forwarding table*".

Moreover, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a scenario when "*a delegation node is found to exist at the position of the insertion node*" as defined in Applicant's claim 3.

Consequently, the rejection of claim 3 is in error and should be withdrawn.

**5. Claim 4**

Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 4's "*reinserting nodes of the left/right subtree, and deleting forwarding information corresponding to the delegation node from the forwarding table*". See the pending claim:

> ***claim 4***, "before making said insertion of forwarding information, when a delegation node is found to exist at the position of the insertion node while detecting said position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree, and when a left/right subtree of the delegation node exists,
> reinserting nodes of the left/right subtree, and
> deleting forwarding information corresponding to the delegation node from the forwarding table".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 10, lines 6-33, column 16, lines 26-36, and column 15, lines 50-60 of Venkatachary '184 and alleged that Venkatachary '184 teaches "search forwarding

information", and "update (insert, delete) location forwarding information". Specifically, on page 9 of Paper No. 20090426, the Examiner stated:

> "Civanlar does not explicitly disclose an aggregation tree for routing information, However, Venkatachary discloses wherein comprised of: a) before making said insertion of forwarding information when a delegation node is found to exist at the position of the insertion node while detecting said position at which an insertion node corresponding to the new routing information is to be inserted into the aggregation tree, and when a left/right subtree of the delegation node exists, reinserting nodes of the left/right subtree, and deleting forwarding information corresponding to the delegation node from the forwarding table, (Venkatachary col. 10, lines 6-33; col 16, ll 26-36: search forwarding information; col. 15, lines 50-60: update (insert, delete) location forwarding information)".

Applicant respectfully traverses because Venkatachary '184's column 15, lines 50-60 as cited by the Examiner merely mentions that the router may update the least cost matching filter,[7] and it is unclear from Venkatachary '184's specification whether "updating the least cost matching filter" is synonymous with "updating forwarding information" as asserted by the Examiner. In addition, Venkatachary '184 does not teach Applicant's "*deleting forwarding information from the forwarding table*".

In addition, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a scenario when "*a delegation node is found to exist at the position of the insertion node*" as defined in claim 4.

Consequently, the rejection of claim 4 is in error and should be withdrawn.

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[7] Venkatachary '184's column 15, lines 53-55 reads: "The router searches the source trie of D', and updates the least cost matching filter."

**6. Claim 5**

**(1)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 5's "*when the ancestor node of the insertion node is found to exist at or below the maximum aggregation level while determining said presence and absence of the ancestor node, searching for a descendant node of the insertion node*". See the pending claim:

> ***claim 5***, "when the ancestor node of the insertion node is found to exist at or below the maximum aggregation level while determining said presence and absence of the ancestor node, searching for a descendant node of the insertion node."

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 10, lines 6-33 and column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "search tree and identify and locate ancestor node". Specifically, on page 10 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) when the ancestor node of the insertion node is found to exist at or below the maximum aggregation level while determining said presence and absence of the ancestor node, searching for a descendant node of the insertion node; (Venkatachary col. 10, lines 6-33; col 16, II 26-36; search tree; identify and locate ancestor node)".

Applicant respectfully traverses because Venkatachary '184's column 16, lines 26-36, as cited by the Examiner, merely teaches how to insert switch pointers in a source trie. Venkatachary '184 does not teach or suggest a "descendent node", or how to search for a descendent node.

In addition, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a

scenario when "*the ancestor node of the insertion node is found to exist at or below the maximum aggregation level*" as defined in claim 5.

Therefore, this rejection of claim 5 is in error and should be withdrawn.

**(2)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 5's "*when a descendant node of the insertion node is found to exist, resetting the aggregation level according to a difference between the prefixes of forwarding information corresponding to the insertion node and the descendant node, and when no descendant nodes of the insertion node are found to exist, resetting the aggregation level according to the aggregation level of the ancestor node of the insertion node*". See the pending claim:

> ***claim 5***, "when a descendant node of the insertion node is found to exist, resetting the aggregation level according to a difference between the prefixes of forwarding information corresponding to the insertion node and the descendant node, and when no descendant nodes of the insertion node are found to exist, resetting the aggregation level according to the aggregation level of the ancestor node of the insertion node."

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 10, lines 6-33 and column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "reset and try different branch for searching". Specifically, on page 10 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) when a descendant node of the insertion node is found to exist, resetting the aggregation level according to a difference between the prefixes of forwarding information corresponding to the insertion node and

> the descendant node, and when no descendant nodes of the insertion node are found to exist, resetting the aggregation level according to the aggregation level of the ancestor node of the insertion node; (Venkatachary col. 16, lines 26-36: switch pointer; reset and try different branch for searching)".

Applicant respectfully traverses because Venkatachary '184's column 16, lines 26-36, as cited by the Examiner, merely teaches when the search on the next bit fails, jumping to the node y of the third source trie. It is unclear from Venkatachary '184's disclosure whether Venkatachary '184's "jumping to the node y of the third source trie" is synonymous with the "reset and try different branch" as asserted by the Examiner.

In addition, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a case when "*a descendant node of the insertion node is found to exist*", or a case when "*no descendant nodes of the insertion node are found to exist*" as defined in claim 5.

Therefore, this rejection of claim 5 is in error and should be withdrawn.

**(3)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 5's "*when the reset aggregation level is greater than zero, determining the source area of the inserted routing information, inserting the forwarding information corresponding to the delegation node in the forwarding table when the source area is a virtual area, and inserting the forwarding information corresponding to the insertion node in the forwarding table when the source area is a local area*". See the pending claim:

> ***claim 5***, "when the reset aggregation level is greater than zero, determining the source area of the inserted routing

> information, inserting the forwarding information corresponding to the delegation node in the forwarding table when the source area is a virtual area, and inserting the forwarding information corresponding to the insertion node in the forwarding table when the source area is a local area".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 15, lines 50-60 and column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "search and update location routing information", and "reset and try different branch for searching". Specifically, on pages 10-11 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) when the reset aggregation level is greater than zero; and determining the source area of the inserted routing information, inserting the forwarding information corresponding to the delegation node in the forwarding table when the source area is a virtual area, and inserting the forwarding information corresponding to the insertion node in the forwarding table when the source area is a local area, (Venkatachary col. 15, lines 50-60: search and update (insert) location routing information; col. 16, lines 26-36: reset and try different branch)".

Applicant respectfully traverses because Venkatachary '184's column 16, lines 26-36, as cited by the Examiner, merely teaches when the search on the next bit fails, jumping to the node y of the third source trie, and Venkatachary '184's column 15, lines 50-60 as cited by the Examiner merely mentions that the router may update the least cost matching filter. There is no evidence in Venkatachary '184's specification showing that Venkatachary '184's "updating the least cost matching filter" is synonymous with Applicant's "inserting forwarding information corresponding to the delegation node in the forwarding table". It is also unclear from Venkatachary '184's disclosure whether Venkatachary '184's "jumping

to the node y of the third source trie" is synonymous with the "reset and try different branch" as asserted by the Examiner.

In addition, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a case when "*the reset aggregation level is greater than zero*", or a case when "*the source area (of the inserted routing information) is a virtual area*", or a case when "*the source area (of the inserted routing information) is a local area*" as defined in claim 5.

Therefore, this rejection of claim 5 is in error and should be withdrawn.

**7. Claim 7**

**(1)** Still another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 7's "*when routing information is to be deleted from a routing table, detecting a deletion node corresponding to the routing information to be deleted in the aggregation tree*". See the pending claims:

> ***claim 7***, "(1) when routing information is to be deleted from a routing table in a distributed router in which all routing nodes share forwarding information assembled according to an aggregation tree based on the routing table, detecting a deletion node corresponding to the routing information to be deleted in the aggregation tree".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner alleged that Civanlar '963 teaches Applicant's "inserting new routing information into a routing table", and "deleting routing information from a routing table" by stating that,

> "Updated configuration or routing data (interpreted as

> modifications which can be interpreted as additions and deletions) is forwarded to all routers. (Civanlar col. 3, lines 41-47: forwarding engine configured to forward new routing table configuration data to every other router port for updating database; information transferred, available, or shared between routing entities)".

In addition, the Examiner explicitly admitted that Civanlar '963 does not disclose an aggregation tree. But, the Examiner referred to the source and destination trie of Venkatachary '184, and stated:

> "Civanlar does not explicitly disclose an aggregation tree for routing information. However, Venkatachary discloses wherein comprising the steps: when routing information is to be deleted from £ routing table in detecting a deletion node corresponding to the routing information to be deleted in the aggregation tree; (Venkatachary col. 15, lines 50-60: search and update (insert) forwarding information)".

Applicant respectfully traverses because the combination of Civanlar '963 and Venkatachary '184 fails to teach or suggest Applicant's "*detecting a position of a deletion node corresponding to the routing information to be deleted in the aggregation tree*".

Respectfully, as discussed previously, Civanlar '963's column 3, lines 41-47, as cited by the Examiner, merely mentions that routing database 104 can be updated by the new routing table configuration data. Nowhere in Civanlar '963 does Civanlar '963 teach or suggest that whether the "new routing table configuration data" contains routing information to be inserted or routing information to be deleted, or exactly how to "update" the routing database. Therefore, the Examiner's assertion that "*updated configuration or routing data (interpreted as modifications which can be interpreted as additions and deletions)*" is unsupported by all of the evidence of record except an impermissible hindsight

reconstruction of the art in the light provided solely by Applicant's claims.

In addition, Venkatachary '184's column 15, lines 50-60, as cited by the Examiner, merely teaches traversing a destination trie and a source trie to find nodes that are associated with a prefix of D'. But there is no evidence in Venkatachary '184's specification demonstrating that Venkatachary '184's "prefix of D'" corresponds to the routing information to be deleted from the destination trie or the source trie. Therefore, Venkatachary '184 does not teach Applicant's "*a deletion node corresponding to the routing information to be deleted*", or "*detecting a position of a deletion node corresponding to the routing information to be deleted in the aggregation tree*".

Consequently, it would **not** have been obvious to one with ordinary skill in the art to combine Civanlar '963's teaching of "updating a routing database" with Venkatachary '184's teaching of " traversing a destination trie and a source trie to find nodes that are associated with a prefix of D'" to make Applicant's "*detecting a position of a deletion node corresponding to the routing information to be deleted in the aggregation tree*".

As a result, the rejection of claim 7 is in error and should be withdrawn.

**(2)** Still yet another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 7's "*searching for a descendant node of the deletion node* ***at a predetermined maximum aggregation level***". See the pending claim:

> ***claim 7***, "when forwarding information corresponding to the deletion node is in a forwarding table, searching for a

> descendant node of the deletion node at a predetermined maximum aggregation level".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 10, lines 6-33 and column 16, lines 26-36 of Venkatachary '184 and alleged that Venkatachary '184 teaches "search for a descendent (ancestor) node". Specifically, on page 13 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) when forwarding information corresponding to the deletion node is in a forwarding table, searching for a descendant node of the deletion node at a predetermined maximum aggregation level; (Venkatachary col 10, 116-33; col 16, II 26-36: search for a descendent (ancestor) node)".

Applicant respectfully traverses because Venkatachary '184 does not disclose "*searching for a descendant node of the deletion node* ***at or below a predetermined maximum aggregation level***". Venkatachary '184 merely mentions an "ancestor record", and an "ancestor trie"; but Venkatachary '184 does not disclose "a descendent node", or whether the ancestor record or the ancestor trie is searched within a specific level.

Therefore, neither one of Civanlar '963 and Venkatachary '184, nor the combination thereof, teaches or suggests Applicant's claim 7's "*searching for a descendant node of the deletion node* ***at a predetermined maximum aggregation level***".

As a result, this rejection of claim 7 is in error and should be withdrawn.

**(3)** Still yet another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 7's

"*when a descendant node of the deletion node exists at an aggregation level not greater than a predetermined maximum aggregation level, setting the descendant node as a new source node of a delegation node, and when no descendant nodes exist for the deletion node at an aggregation level not greater than a predetermined maximum aggregation level, deleting the forwarding information corresponding to the deletion node from the forwarding table*".

See the pending claim:

> ***claim 7***, "when a descendant node of the deletion node exists at an aggregation level not greater than a predetermined maximum aggregation level, setting the descendant node as a new source node of a delegation node, and when no descendant nodes exist for the deletion node at an aggregation level not greater than a predetermined maximum aggregation level, deleting the forwarding information corresponding to the deletion node from the forwarding table".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 15, lines 50-60 Venkatachary '184 and alleged that Venkatachary '184 teaches "search and update forwarding information". Specifically, on page 13 of Paper No. 20090426, the Examiner stated:

> "(Venkatachary '184 discloses) when a descendant node of the deletion node exists at an aggregation level not greater than a predetermined maximum aggregation level, setting the descendant node as a new source node of a delegation node, and when no descendant nodes exist for the deletion node at an aggregation level not greater than a predetermined maximum aggregation level, deleting the forwarding information corresponding to the deletion node from the forwarding table. (Venkatachary col. 15, lines 50-60: search and update (delete) forwarding information)".

Applicant respectfully traverses because Venkatachary '184 column 15, lines 50-60, as cited

by the Examiner, merely teaches traversing a destination trie and a source trie to find nodes that are associated with a prefix of D', and nowhere in Venkatachary '184's specification does Venkatachary '184 teach or suggest "search and update forwarding information".

Even assuming *arguendo* that Venkatachary '184 teaches or suggests "search and update forwarding information", it is unclear how "search and update forwarding information" corresponds to Applicant's "setting the descendant node as a new source node of a delegation node", and "deleting the forwarding information corresponding to the deletion node from the forwarding table".

Moreover, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a case when "*a descendant node of the deletion node exists at an aggregation level not greater than a predetermined maximum aggregation level*", or a case when "*no descendant nodes exist for the deletion node at an aggregation level not greater than a predetermined maximum aggregation level*", as defined in claim 7.

Therefore, this rejection of claim 7 is in error and should be withdrawn.

**8. Claim 8**

Still yet another principal patentable distinction between the pending claims and the combined prior art is that the combined prior art fails to teach or suggest claim 8's "*when the deletion node is a source node that created a delegation node, changing forwarding information corresponding to the delegation node in conformance with the forwarding information corresponding to the deletion node*". See the pending claim:

> ***claim 8***, "when the deletion node is a source node that created a delegation node, changing forwarding information corresponding to the delegation node in conformance with the forwarding information corresponding to the deletion node".

Regarding the above-cited limitation, in Paper No. 20090426, the Examiner referred to column 15, lines 50-60 Venkatachary '184 and alleged that Venkatachary '184 teaches "search and update (delete) forwarding information". Specifically, on pages 13-14 of Paper No. 20090426, the Examiner stated:

> "Venkatachary discloses wherein comprising the step of, the deletion node is a source node that created a delegation node, changing forwarding information corresponding to the delegation node in conformance with the forwarding information corresponding to the deletion node. (Venkatachary col. 15, lines 50-60: search and update (delete) forwarding information)".

Applicant respectfully traverses because Venkatachary '184 column 15, lines 50-60, as cited by the Examiner, merely teaches traversing a destination trie and a source trie to find nodes that are associated with a prefix of D', and nowhere in Venkatachary '184's specification does Venkatachary '184 teach or suggest "*search and update forwarding information*" as asserted by the Examiner.

Even assuming *arguendo* that Venkatachary '184 teaches or suggests "search and update forwarding information", it is unclear how "search and update forwarding information" corresponds to Applicant's "*changing forwarding information corresponding to the delegation node in conformance with the forwarding information corresponding to the deletion node*".

Moreover, neither Civanlar '963 nor Venkatachary '184 teaches or suggests a case

when "*the deletion node is a source node that created a delegation node*", as defined in claim 8.

Therefore, this rejection of claim 8 is in error and should be withdrawn.

In view of the foregoing amendments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. If there are any questions, the examiner is asked to contact the applicant's attorney.

No fee is incurred by this Amendment.

Respectfully submitted,

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